

CLAIMS

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1. A method of producing a multi-layered image transfer member including a body portion and an image transfer portion, the image transfer portion having an image transfer surface and a back surface, comprising:

5 forming the image transfer portion on a carrier substrate; and

transferring the image transfer portion onto the body portion such that the back surface of the image transfer portion faces the body portion.

2. A method according to claim 1 wherein the image transfer portion is formed on the carrier 10 substrate such the back surface of the image transfer portion faces the carrier substrate.

a 3. A method according to claim 1 or claim 2 wherein transferring the image transfer portion comprises:

15 transferring the image transfer portion to a moving carrier surface, such that at least a portion of the image transfer surface is in contact with the moving surface, and

laminating the image transfer portion onto the body portion such that the back surface of the image transfer portion faces the body portion.

a 4. A method according to any of the preceding claims and further comprising curing at least 20 one of the layers in said multi-layered member after transferring the image transfer portion.

5. A method according to claim 4 wherein the image transfer member comprises a polymer layer interfacing the back surface of the image transfer portion and wherein curing at least one of the layers comprises curing the polymer layer after laminating the image transfer portion onto 25 the body portion.

6. A method according to claim 5 wherein the polymer layer is a conductive layer.

a 7. A method according to claim 5 or claim 6 wherein the polymer layer is part of the body 30 portion.

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- a 8. A method according to claim 5 or claim 6 wherein the polymer layer is part of the image transfer portion.
- a 9. A method according to any of claims 4 or 7 wherein the image transfer portion comprises a release layer at the image transfer surface and a conforming layer and wherein curing at least one layer comprises curing the release layer and the conforming layer before laminating the image transfer portion to the body portion.
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- a 10. A method according to any of claims 4 or 8 wherein the image transfer portion comprises a release layer at the image transfer surface and a conforming layer and wherein curing at least one layer comprises curing the release layer and the conforming layer after laminating the image transfer portion to the body portion.
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- a 11. A method according to any of the preceding claims wherein forming the image transfer portion comprises:
15 coating the carrier substrate with a conforming layer.
- a 12. A method according to any of claims 1 or 10 wherein forming the image transfer portion comprises:
20 coating the carrier substrate with a barrier layer.
- a 13. A method according to any of claims 1 or 10 wherein forming the image transfer portion comprises:
25 coating the carrier substrate with a conductive layer.
14. A method according to claim 13 wherein forming the image transfer portion comprises:
coating the conductive layer with a barrier layer.
- a 15. A method according to claim 12 or claim 14 wherein forming the image transfer portion comprises:
30 coating the barrier layer with a conforming layer.

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16. A method according to claim 14 wherein forming the image transfer portion comprises:
coating the barrier layer with a conductive layer.
17. A method according to claim 13 or claim 16 wherein forming the image transfer portion comprises:
coating the conductive layer with a conforming layer.
18. A method according to any of claims 9, 11, 15 or 17 wherein the conforming layer comprises a plurality of layers of different hardnesses.
19. A method according to any of claims 11, 15, 17, or 18 wherein forming the image transfer portion comprises:
overcoating the conforming layer with a release layer.
20. A method according to any of the preceding claims wherein the release layer comprises a layer of condensation type silicone.
21. A method according to claim 20 wherein the condensation type silicone contains less than 4% filler material.
22. A method according to claim 20 wherein the condensation type silicone contains less than 1% filler material.
23. A method according to claim 20 wherein the condensation type silicone contains less than 0.1% filler material.
24. A method according to any of claims 20 or 23 wherein the release layer has a thickness of less than 1 mm.
25. A method according to any of claims 20 or 23 wherein the release layer is less than 200 micrometers thick.

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a 26. A method according to ~~any of claims 20 to 23~~ wherein the release layer is less than 100 micrometers thick.

a 27. A method according to ~~any of claims 20 to 23~~ wherein the layer is less than 50 micrometers thick.

a 28. A method according to ~~any of claims 20 to 23~~ wherein the layer is between about 3 and about 15 micrometers thick.

10 29. An image transfer member suitable for the transfer of toner images and having an outer release layer of a condensation type silicone.

15 30. An image transfer member according to claim 29 wherein the layer has a thickness of less than 1 mm.

15 31. An image transfer member according to claim 29 wherein the layer is less than 200 micrometers thick.

20 32. An image transfer member according to claim 29 wherein the layer is less than 100 micrometers thick.

25 33. An image transfer member according to claim 29 wherein the layer is less than 50 micrometers thick.

34. An image transfer member according to claim 29 wherein the layer is between about 3 and about 15 micrometers thick.

a 35. An image transfer member according to ~~any of claims 29 to 34~~ wherein the outer release layer contains less than 10% silicone oil.

30 a 36. An image transfer member according to ~~any of claims 29 to 34~~ wherein the outer release layer contains less than 5% silicone oil.

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a 37. An image transfer member according to any of claims 29 to 34 wherein the outer release layer contains less than 1% silicone oil.

a 38. An image transfer member according to any of claims 29 to 34 wherein the outer release layer contains essentially no silicone oil.

B a 39. ~~An image transfer member~~ A method according to any of claims 29 to 38 wherein the condensation type silicone contains less than 4% filler material.

? a b c d 40. ~~An image transfer member~~ A method according to any of claims 29 to 38 wherein the condensation type silicone contains less than 1% filler material.

B a b c d 41. ~~An image transfer member~~ A method according to any of claims 29 to 38 wherein the condensation type silicone contains less than 0.1% filler material.

a 42. An image transfer member according to any of claims 29 to 41 wherein the outer release layer contains added crosslinker.

a 43. An image transfer member according to any of claims 29 to 42 wherein the outer release layer contains added catalyst.

a 44. An image transfer member according to any of claims 29 to 43 wherein the outer release layer contains added conductive material.

a 45. An image transfer member according to any of claims 29 to 44 wherein adhesion of the outer release layer to the image transfer member is enhanced utilizing primer.

a 46. Apparatus for producing a multi-layered image transfer member including a body portion and an image transfer portion, the image transfer portion having an image transfer surface and a back surfaced, comprising:

a carrier substrate having the image transfer portion formed thereon such that the back surface of the image transfer portion faces the carrier substrate and is releasable therefrom; and

5 a moving carrier surface, in contact with a portion of the image transfer surface, which receives the image transfer portion from the carrier substrate, at a first transfer region, and laminates the image transfer portion onto the body portion, at a second transfer region, with the back surface of the image transfer portion facing the body portion.

47. Apparatus according to claim 46 and further comprising a curing device which cures at least one of the layers in said multi-layered member.

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48. An image transfer member comprising:

a transfer surface adapted to receive already formed images; and

15 a conforming layer substantially immediately beneath the release surface which comprises a plurality of sub-layers each having a Shore A hardness of less than 80.

49. An image transfer member according to claim 48 wherein the sub-layers each have a shore A hardness of less than 70.

50. An image transfer member according to claim 48 wherein the sub-layers each have a shore A 20 hardness of less than 60.

51. An image transfer member according to any of claims 48-50 wherein the sub-layers comprise at least two sub-layers, a relatively harder one of said sub-layers being situated between the release surface and a relatively softer one of said sub-layers.

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52. An image transfer member according to claim 51 wherein the relatively softer sub-layer has a Shore A hardness of less than 42.

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53. An image transfer member according to claim 51 wherein the relatively softer sub-layer has a Shore A hardness of less than 35.

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54. An image transfer member according to claim 51 wherein the relatively softer sub-layer has a Shore A hardness of less than 25.

55. An image transfer member according to any of claims 51 to 54 wherein the relatively harder sub-layer has a Shore A hardness of greater than 42.

56. An image transfer member according to any of claims 51 to 54 wherein the relatively harder sub-layer has a Shore A hardness of greater than 50.

57. An image transfer member according to any of claims 51 to 54 wherein the ratio of thickness of the relatively hard sub-layer to the thickness of the relatively softer sub-layer is about 1:4.

58. An image transfer blanket comprising:

a body portion including a layer of resilient material; and
15 a multi-layered transfer portion having an image transfer surface and including a supporting base layer which is formed of a substantially non-compliant material,
wherein the supporting base layer of the transfer portion interfaces the body portion.

59. An image transfer blanket according to claim 58 wherein the supporting base layer comprises a layer of Kapton.

60. A method of producing a multi-layered image transfer blanket comprising:
forming a multi-layered image transfer portion having an image transfer surface and a supporting base layer, the base layer being formed of a substantially non-compliant material;
25 and
attaching the image transfer portion to a body portion including a layer of substantially resilient material,
wherein the supporting base layer of the transfer portion interfaces the body portion.

30 61. An intermediate transfer member, which receives a toner image from an imaging surface and from which it is subsequently transferred, comprising:
a drum; and

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an image transfer blanket mounted on the drum, the image transfer blanket comprising:
a body portion including a layer of resilient material; and
a multi-layered transfer portion having an image transfer surface which receives the toner
image and a supporting base layer which is formed of a substantially non-compliant material,
5 wherein the supporting base layer of the transfer portion interfaces the body portion.

62. An intermediate transfer member according to claim 60 wherein the supporting base layer
comprises a layer of Kapton.

10 63. An intermediate transfer member, which receives a toner image from an imaging surface and
from which it is subsequently transferred, comprising:

a drum;
a resilient blanket body mounted circumferentially on the surface of the drum and having a
functional length;
15 a sheet of image transfer material having first and second ends and having a length equal to
at least twice the functional length of the blanket body;
a transfer material supply member associated with the first end of the sheet; and
a transfer material take-up member associated with the second end of the sheet,
wherein an appropriate length of the sheet is stretched between the supply member and the
20 take-up member, over the functional length of the blanket body.

64. An intermediate transfer member according to claim 63 wherein a predetermined length of
used-up sheet is taken-up by the take-up member and replaced with approximately the same
length of unused sheet which is supplied the supply member.

25 65. A carrier sheet having formed thereon a multi-layered image transfer arrangement, the image
transfer arrangement comprising a back surface and an image transfer surface, wherein the back
surface of the image transfer arrangement faces the carrier sheet and is removably attached
thereto.